FOUR NEW SPECIES OF HYDROPTILIDAE (TRICHOPTERA) FROM THE ALLIGATOR RIVERS REGION, NORTHERN TERRITORY

by A. WELLS*

Summary

WELLS, A. (1985) Four new species of Hydroptilidae (Trichoptera) from the Alligator Rivers region, Northern Territory. *Trans. R. Soc. S. Aust.* **109**(3), 97-102, 29 November, 1985.

Four new species of micro-caddis fly (Hydroptilidae) from the Alligator Rivers region, Northern Territory, are described in the genera *Hellyethira, Tricholeiochiton, Oxyethira* and *Orthotrichia;* notes are given on their possible relationships. Collecting data for three species suggest that these show strong seasonality, with two species emerging almost exclusively in the dry season (July), and one in the wet (March).

KEY WORDS: Taxonomy, Trichoptera, Hydroptilidae, Alligator Rivers, seasonality.

Introduction

Regular monitoring of "emergence" traps on three natural water bodies near Jabiru in the Alligator Rivers region, Northern Territory, yielded information on species diversity, seasonality, and diel activity of a number of Trichoptera (Sharley & Malipatil 1985, and unpublished data). Amongst the microcaddis flies (Hydroptilidae) collected (14 species in four genera), were four species which are described here for the first time, and which are referred to the genera *Hellyethira* Neboiss, *Tricholeiochiton* Kloet & Hincks, *Oxyethira* Eaton and *Orthotrichia* Eaton.

Within Australia, *Tricholeiochiton* is known only from the north (Wells 1982), where five species have now been recorded. The genus is elsewhere represented by a single species in the Palaearctic and two species in S.E. Asia (Marshall 1979). The subgenus *Dampfitrichia* in *Oxyethira,* into which one new species is placed, has a similar northern distribution in Australia where four species are now known; it occurs elsewhere in S.E. Asia, the Neotropics, the Palaearetic, and the Western Pacific (Kelley 1984, and pers. comm.). In contrast, *Hellyethira* and *Orthotrichia* are widespread in Australia (Wells 1979a & b, 1983), and now total 18 and 35 known species, respectively. One Australian species of *Hellyethira* is recorded from New Caledonia (Wells unpublished data), and Kelley (1984) has transferred a Japanese species to this genus. *Orthotrichia* is absent from SW Australia, but is especially diverse in the north. Seven species were collected in the Alligator Rivers study (Sharley & Malipatil unpublished data); about 54 species are known from elsewhere in the world.

Emergence data for the three seasons that were monitored, late-dry 1982 (October/November), wet 1983 (March), and dry 1983 (July) (Supervising Scientist for Alligator Rivers region 1984; Sharley & Malipatil 1985[1]) give some indication of life cycle patterns of a number of species and suggest that three of the new species, at least, are highly seasonal. Interestingly, each of these appears to be more closely allied to a north-eastern than a north-western congener.

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Materials and Methods

All material was collected in the Alligator Rivers region, Northern Territory, from three natural water bodies, the Magela Creek (at N.T. Water Division gauging station 821009), Georgetown Billabong and Corndorl Billabong. Trapping methods are deserибed in the Alligator Rivers Region Research Institute, Research Report 1983-84 (Supervising Scientist for Alligator Rivers region, 1984).

Methods for preparation, drawing, and storage of specimens follow Wells (1978). All material, including types, is the property of the Northern Territory Museum of Arts and Sciences, Darwin (NTM), where it is lodged.

Hellyethira veruta sp. nov.

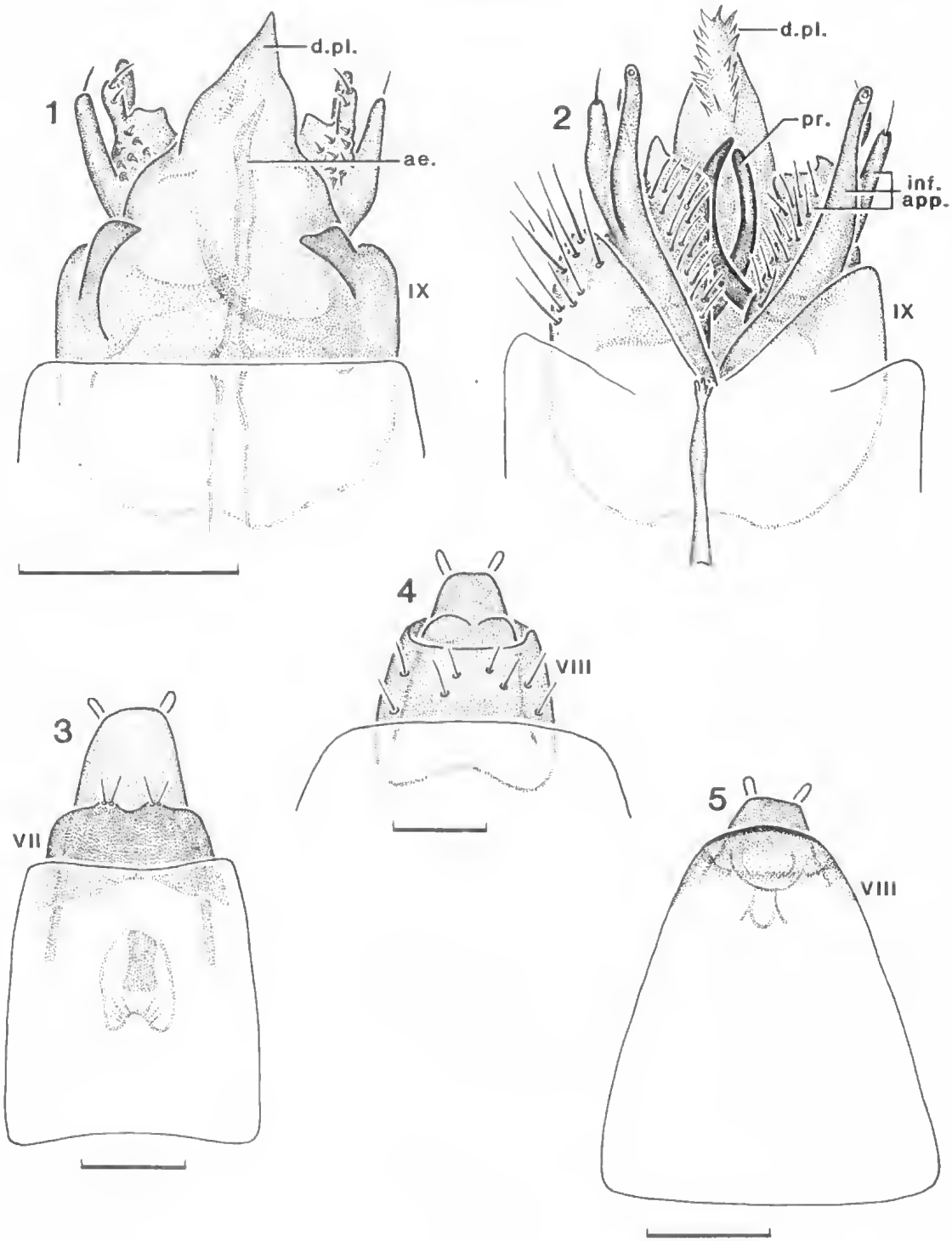
FIGS 1-3

Holotype: NTM 1.56♂, Magela Creek, S. of Georgetown Billabong, N.T., 11.vii.1983, A. J. Sharley.

Paratypes: NTM 1.57-63 3♂, 4♀ (including allotype 1.60) collected with holotype, NTM 1.64-89 16♂, 10♀, same locality, A. J. Sharley, 1.vii.1983; NTM 1.90 1♀, 27.vi.1983, NTM 1.91-94 4♀, 29.vi.1983, Georgetown Billabong, nr Jabiru, N.T., A. J. Sharley; NTM 1.95 1♀, 30.iii.1983, NTM 1.96 1♀, 22.iii.1983, Corndorl Billabong, nr Jabiru, N.T., A. J. Sharley.

Other material examined: 7♂, 10♀, 27.vi.1983, 2♂, 2♀, 29.vi.1983, 4♂, 10♀, 3.vii.1983, 1♂, 2♀, 5.vii.1983, 4♂, 9♀,

[1] Sharley, A. J. & Malipatil, M. B. (1985) Aquatic insect emergence from waterbodies in the vicinity of Ranger Uranium Mine, Jabiru, Northern Territory. *Supervising Scientist for the Alligator Rivers Region, Res. Rep. 1985* (unpublished).



Figs 1–5. *Hellyethira veruta* sp. nov. 1, 2. ♂ genitalia in dorsal and ventral views. 3. ♀ terminalia, ventral view. *Tricholeiochiton jabirella* sp. nov. 4. ♀ terminalia, ventral view. *Oxyethira warramunga* sp. nov. 5. ♀ terminalia, ventral view. Abbreviations: ae., aedeagus, d.pl., dorsal plate; inf.app., inferior appendage; pr., paramere; VII, VIII, IX, abdominal segments VII, VIII, and IX. Scale bars = 0.1 mm.

7.vii.1983, 2♂, 4♀, 9.vii.1983, 1♂, 3♀, 13.vii.1983, 2♂, 2♀, 15.vii.1983, 1♂, 1♀, 17.vii.1983, 1♂, 1♀, 19.vii.1983, 1♂, 1♀, 21.vii.1983, ♂, 23.vii.1983, 1♂, 1♀, 25.vii.1983, 1♂, 1♀, 20.iii 1983, 1♂, 22.iii.1983, 1♀, 26.iii.1983, 2♀, 28.iii.1983, Magela Creek, S. of Georgetown Billabong, N.T., A. J. Sharley.

Diagnosis: Medium sized, with mottled fawn-cream vestiture.

Male. Length of anterior wing 1.5–1.7 mm. Antennae 30-segmented. Genitalia symmetrical, as in Figs 1, 2. Inferior appendages multilobed, ventral-most lobe elongate, slender, bifid distally; second lobe also slender and elongate; upper lobe plate-like in ventral view, with apicolateral angles attenuated. Dorsal plate membranous, with a median serrate "ruff". Paramere slender, curved, intersecting medially. No subgenital plate evident.

Female. Length of anterior wing 1.6–2.1 mm. Terminalia (Fig. 3) short, sternite VII slightly bilobed apicomesally, each lobe tipped by paired setae.

H. veruta shows close similarity to *H. eskensis* (Mosely) and *H. sentisa* Wells (Wells 1979a) which have similar scissor-like parameres. The inferior appendages more closely resemble those of *H. eskensis*, although the dorsal plate of *H. veruta* is distinct from those of the other two species. Hitherto, I considered *H. eskensis* and *H. sentisa* to be close sister species; the precise nature of their relationship to *H. veruta* is unknown, but the three species clearly form a distinct lineage within *Hellyethira*.

H. veruta appears to be quite seasonal: it is absent from late-dry season collections, rare in those from the wet season, and most abundant in the dry season samples. Most specimens were taken from Magela Creek and only few from the two lagoons. At the sampling site Magela Creek has a white sand substrate, and lacks the macrophyte community found in the lagoons; in the dry season the water recedes to form a small stagnant pool in the stream channel (Malipatil pers. comm.).

Tricholeiochiton jabirella sp. nov.
FIGS 4, 6, 7

Holotype: NTM L97 ♂, Corndorl Billabong, nr Jabiru, N.T., 20.iii.1983, A. J. Sharley.

Paratypes: NTM L98 1♂, L99 (allotype) ♀, collected with holotype; NTM L100 1♂, 12.iii.1983, NTM L101 1♂, 16.iii.1983, NTM L102–103 2♂, 18.iii.1983, Corndorl Billabong, nr Jabiru, N.T.; NTM L104 1♂, Georgetown Billabong, nr Jabiru, N.T., A. J. Sharley, 7.iii.1983.

Diagnosis: Medium sized, with mottled wings, tips of wings upturned, R_2 and R_3 arise independently in anterior wings.

Male. Length of anterior wing 2.2–2.5 mm. Antennae 32-segmented. Genitalia as in Figs 6, 7. Segment X short, sternite with broad, deep, median excavation, lateral lobes sclerotised distally. Dorsal plate trilobed, membranous, central lobe subquadrate. Subgenital plate membranous, broad, narrowly cleft apicomesally. Inferior appendages stout, slightly extended apicomesally to form rounded, sclerotised lobes. Aedeagus with a black spine arising subapically and projecting slightly beyond apex.

Female. Length of anterior wing 2.5 mm. Antennae 22-segmented. Terminalia (Fig. 4) short, pale; segment VIII simple, collar-like.

T. jabirella is most closely allied to *T. fidelis* Wells (Wells 1982) with which it shares the general form of its male genitalia and wing venation. However, it is readily distinguished by the black spine on the aedeagus, broader inferior appendages, and bilobed subgenital plate. Both species were collected from the same localities in the emergence traps. *T. jabirella* appears to be highly seasonal, being taken only in the wet season (March), while *T. fidelis* was collected in all seasons (Sharley & Malipatil unpublished data). Although congeners were collected from lagoons only in the Alligator Rivers region, *T. fidelis* has been taken from rivers and streams in NE Queensland. Both Georgetown and Corndorl billabongs have black clay substrates and macrophyte communities, and have slow flow only in the wet season (Malipatil pers. comm.).

Oxyethira (Dampfitrichia) warramunga sp. nov.
FIGS 5, 8, 9

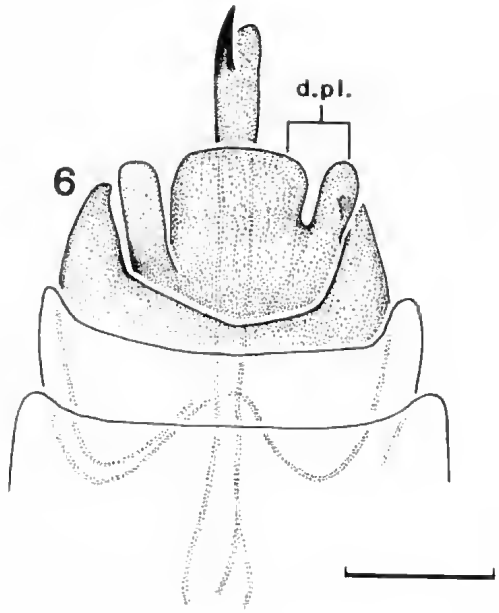
Holotype: NTM L105 ♂, Georgetown Billabong, nr Jabiru, 21.vii.1983, A. J. Sharley.

Paratypes: NTM L106–109 1♂, 3♀, (including allotype L107), 21.vii.1983, NTM L110–112 3♀, 27.vi.1983, NTM L113–116 1♂, 4♀, 3.vii.1983, NTM L117–118 1♂, 1♀, 15.vii.1983, NTM L119 1♂, 19.vii.1983, NTM L120 1♀, 29.vi.1983, NTM L121 1♂, 27.vii.1983, Georgetown Billabong, nr Jabiru, N.T., A. J. Sharley; NTM L122 1♀, 3.vii.1983, NTM L123 1♀, 29.vii.1983, Magela Creek, S. of Georgetown Billabong, N.T., A. J. Sharley; NTM L124 1♂, Corndorl Billabong, nr Jabiru, N.T., 23.vii.1983.

Other material examined: 1♀, 29.vi.1983, 2♀, 5.vii.1983, 1♀, 9.vii.1983, 2♀, 25.vii.1983, Georgetown Billabong, nr Jabiru, N.T., A. J. Sharley, NTM; 1♀, 26.vi.1983, 1♀, 27.vi.1983, 3♀, 29.vi.1983, 4♀, 1.vii.1983, 3♀, 3.vii.1983, 11♀, 5.vii.1983, 1♀, 9.vii.1983, 1♀, 19.vii.1983, 2♀, 27.vii.1983, Magela Creek, S. of Georgetown Billabong, N.T., A. J. Sharley, NTM.

Diagnosis: Minute caddisflies with mottled vestiture; spur formula 0,2,4.

Male. Length of anterior wing 1.1–1.5 mm. Antennae 26-segmented. Genitalia as in Figs 8, 9. Segment VIII broad, rounded, sternite widely and shallowly excised apicomesally; tergite with a broad, deep mesal concavity. Dorsal plate membranous, rounded, broad at base, narrower distally. Aedeagus stout, without titillator. Inferior appendages discrete distally, fused at base; paired lobes dorsal to inferior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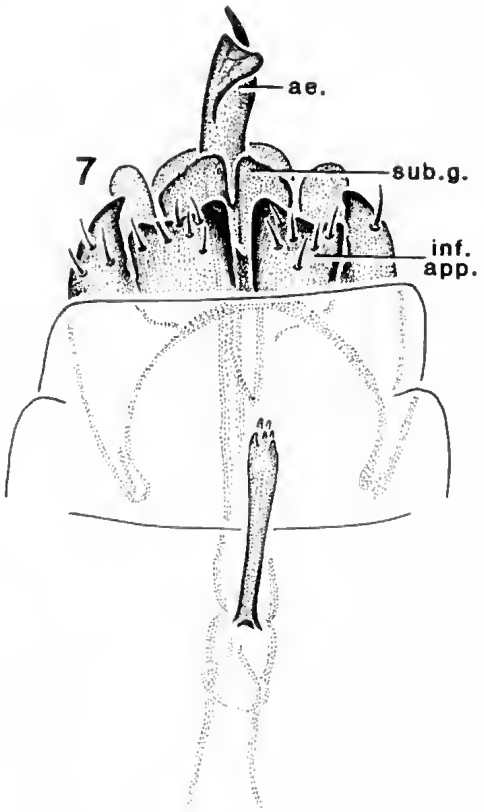
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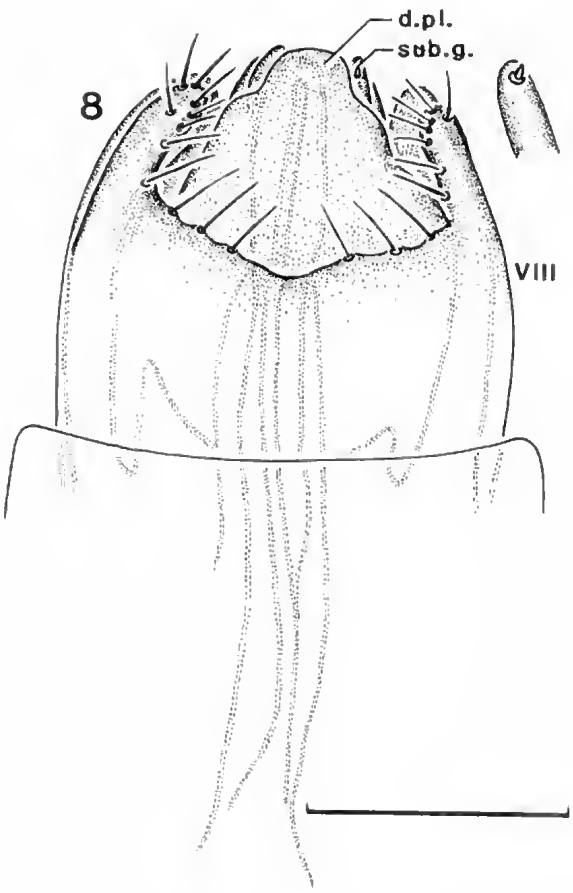
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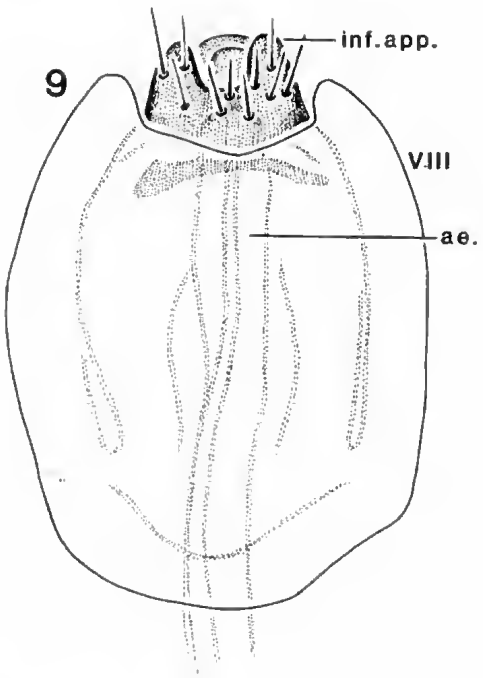
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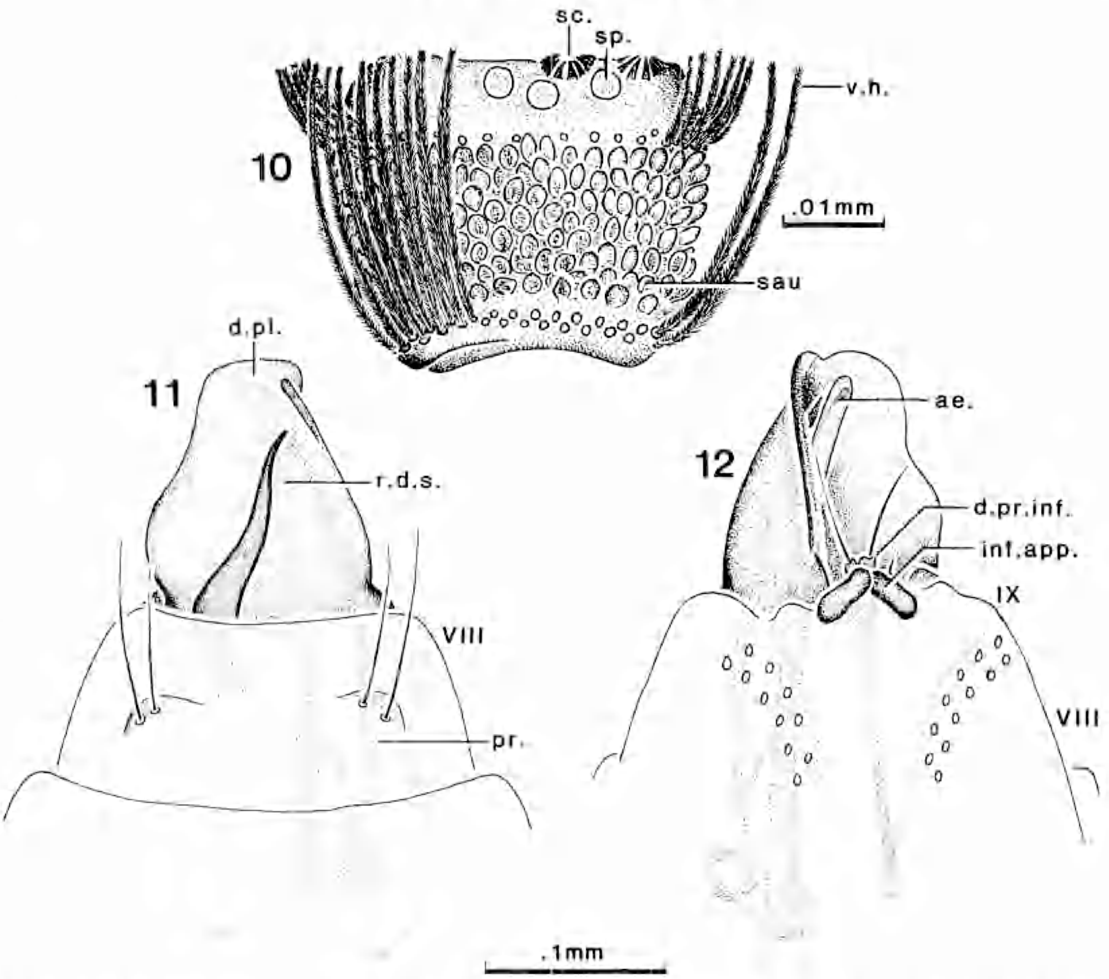

Figs 10–12. *Orthotrichia eurhinata* sp. nov. ♂. 10. 7th antennal segment, dorsal view; 11, 12. genitalia, dorsal and ventral views. Abbreviations: ae., aedeagus; d.pl., dorsal plate; d.pr.inf., dorsal process of inferior appendages; inf.app., inferior appendages; pr., paramere; rds., right dorsal spine; sau., sensilla auricillica; sc., sensilla coeloconica; sp., sensilla placodea; v.h., vestitural hair; VIII, IX, abdominal segments VIII and IX. Scale bars as indicated.

appendages may represent the subgenital plate.

Female. Length of anterior wing 1.4–2.0 mm. Antennae 20-segmented; stapes about 2× length of pedicel. Terminalia as in Fig. 5. Sternite VIII triangular, apex with a narrow sclerotised band; tergite shallowly concave apically.

O. warramunga is clearly a member of the *minima* group in *O. Dampfitrichia*, to which two other north Australian species, *O. artuvillosus* (Wells) and *O. plumosa* (Wells), belong (Kelley 1984). However it lacks their distinguishing features—areas of androconia on abdominal tergite VI, elongate hairs on the hind tibiae, and a patch or border of stout black setae apicomesallly on sternite VIII. The female terminalia of *O. warramunga* are distinguished only by the shallowly concave apex of tergite VIII, compared with the angular vertex of *O. artuvillosus*. In features of male genitalia *O. warramunga* is probably closer to *O. plumosa* than to *O. artuvillosus*.

Only a single specimen was collected in the late dry season, all others were taken in the dry season at all three localities. One male and three females of *O. artuvillosus* were also collected from Magela Creek in the dry season of 1983 (Sharley & Malipatil unpublished data).

Figs 6–9. *Tricholeiochiton jabirella* sp nov. 6, 7. ♂ genitalia, dorsal and ventral views. *Oxyethira warramunga* sp. nov. 8, 9. ♂ genitalia, dorsal and ventral views. Abbreviations: ae., aedeagus; d.pl., dorsal plate; inf.app., inferior appendage; sub.g., subgenital plate; VIII, abdominal segment VIII. Scale bars = 0.1 mm.

Orthotrichia eurhinata sp. nov.
FIGS 10-12

Holotype: NTM I.125 ♂, Georgetown Billabong, nr Jabiru, 17.vi.1983, A. J. Sharley.

Diagnosis: Known only from a single medium-sized male with distinctive antennae: segments of proximal ⅓ of flagellum stout, broader than long, subsequent segments becoming more elongate towards tip; proximal segments with whorls of vestitural hair on either side of a broad band of sensilla auricillica (Fig. 10), distal segments with incomplete bands or patches of auricillica.

Length of anterior wing 1.7 mm. Antennae 24-segmented; 4 terminal segments dark, preceeded by 1 pale, 4 dark, 2 pale, and 13 dark segments. Genitalia as in Figs 11, 12. Right dorsal spine only present, elongate, tapering and curved across dorsal plate. Dorsal plate rounded apically, wrapping around aedeagus; a small blunt subapical process on dorsum. Inferior appendages small, discrete, symmetrical; dorsal process short, divided apically; basal apodeme elongate slender. Paramere thin, curved.

Female unknown.

O. eurhinata is in the *O. adornata* group in the Australian *Orthotrichia* and is probably closest to *O. bullata* Wells, another north Australian species (Wells 1979b), although *O. bullata* has more elaborate dorsal spines and larger, rounded inferior appendages. The form of the antennae of *O. eurhinata* is quite unique, at least amongst the Australian and New Guinean members of the genus, which have scattered vestitural hair on all segments and large numbers of sensilla placodea (Wells 1984).

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